



FALL 2026 SATURDAY SERIES CLASSES

Carnegie Mellon University

Scholarship funds are available!

- Each class is \$55
- Scholarship funds are provided through gifts from Carnegie Mellon University alumni

Full schedule can be found on the last page

STEM FOCUSED



EDUCATIONAL



RIGOROUS



HANDS-ON FUN



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4910 Forbes Ave, Cyert Hall A64
Pittsburgh, PA 15213

gelfandcenter@andrew.cmu.edu

412-268-1863

ALL ABOUT THE BRAIN

Grades 6-9, October 10

New to neuroscience? In this workshop you will get a comprehensive overview of how the brain works and what it does! Learn about how your body's different senses work and how your brain uses information about each sense to learn about the world around you. Students will also learn about the inner workings of the brain and how your brain controls your body's movements with electrical signals. We will have hands-on activities to explore your awesome brain in action!



Emily Lopez, Ani Gribbin, Aidan Johantges, and Anne Claire Tangen are all PhD students at Carnegie Mellon's Neuroscience Institute. As scientists, they research different aspects of how the brain works to control the body, with specialties in areas like vision, hearing, and mathematical modeling. As part of the neuroscience programs at Carnegie Mellon, they serve as teaching assistants, as well as being involved in science-related outreach programs. One of their shared passions is bringing accessible science to kids and inspiring more young minds to join STEM fields like neuroscience.



BRAIN BUILDERS: ENGINEERING YOUR MIND

Grades 4-6, September 19

Have you ever wondered how you remember your favorite song, your friend's name, or your first day of school? Why do some people begin to lose those memories as they grow older? In this exciting, hands-on workshop, students will discover how billions of neurons communicate through tiny connections called synapses to help us think, learn, and remember. We'll build colorful neuron models, connect them into giant classroom-sized brain networks, and take on interactive memory games and engineering challenges to explore how memories are created, strengthened, and stored. Along the way, students will investigate how Alzheimer's disease affects these important brain connections and discover how learning new skills, solving puzzles, and making meaningful connections may help build a stronger, healthier brain throughout life.

Syed Rob



Syed Rob is an undergraduate student and researcher at Carnegie Mellon University studying Neuroscience and Biomedical Engineering. In his neuroscience research, he investigates brain development using behavioral mouse models, including a valproic acid (VPA) exposure model to better understand autism spectrum disorder and other neurodevelopmental conditions. In his biomedical engineering research, he contributes to the development and evaluation of next-generation artificial lungs and extracorporeal membrane oxygenation (ECMO) technologies designed to provide safer, longer-term respiratory support for patients with severe lung disease. Outside the laboratory, Syed is passionate about making science engaging and accessible through hands-on STEM outreach and promoting STEM literacy. He hopes to inspire the next generation of scientists, engineers, and physicians.

BUG BOTS

Grades K-2, September 19

Bounce your way into the exciting world of robots by exploring motion, power, and electricity. Discover the way motors and batteries operate. Discuss robots and bugs and then create a robot, explain how it moves, and take the robot home to share with your family and friends! Parents are invited to attend the Bug Bots parade at the end of class. (See instructor bio below)



Madelynn Tomko is a second-year undergraduate student at Carnegie Mellon University majoring in Civil Engineering and hoping to pursue an additional major in Engineering and Public Policy. Madelynn works for the Leonard Gelfand Outreach center as a Teaching Assistant where she ensures that the Saturday STEMgineer classes run smoothly and provide a positive learning experience for all students involved. Before joining the LGC, Madelynn served as a camp counselor facilitating activities to encourage sustainability/environmental education.

Madelynn Tomko

CODING FOR BEGINNERS

Grades 2-4, November 7

Have you ever wondered how computers make decisions? In this course we will learn how computers follow routines and instructions to complete a final task. Coding can seem like a lot of complicated numbers, so we will teach through fun activities where students perform everyday tasks to simulate how a computer 'thinks.' Kids will act as both a person instructing a computer, and as the computer interpreting its instructions. The purpose of this course is to introduce coding concepts with off-line instructional activities.



Gillian Gold is a Ph.D. student at Carnegie Mellon's Human-Computer Interaction Institute (HCII). Her research focuses on how technology can support effective, practice-first learning environments in STEM education. She previously studied cognitive science and computer programming at Yale University. In her free time, Gillian enjoys meeting friends for coffee, reading, and exploring new restaurants in Pittsburgh.



Sarah Santos is a fourth-year Ph.D. student in Software Engineering at Carnegie Mellon University. She studies how people reason about the legal aspects of software. Her research explores how people understand and describe complex software systems, and how AI agents can support clearer communication and collaboration in software engineering. Before graduate school, Sarah worked with lawyers and economists on quantitative fraud investigations. Besides research, she is passionate about making computer science accessible and engaging for learners of all ages and shares that enthusiasm through K-12 STEM outreach at CMU and beyond.

COMPLEX FLUID TOYS

Grades 3-5, September 19

Is slime a liquid or a solid? What about orbeez? In this workshop we will explore the world of complex fluids, which are materials that aren't quite solids, but aren't quite liquids either! We'll learn all about the chemistry that makes these types of materials squishy and gooey, along with how chemical engineers use these materials to make products we use every day.

Khantey Lim



Khantey Lim is a Ph.D. student in Chemical Engineering at Carnegie Mellon University, where she researches sustainable polymeric materials and interfaces. Originally from Cambodia, Khantey received a scholarship at age 13 to attend the United World College (UWC) in Singapore for high school. She later earned both her B.S. and M.S. degrees in Chemical Engineering from Northwestern University. Before beginning her Ph.D. studies, she worked for a year as a process engineer in industry. Outside of research, Khantey enjoys playing badminton, rock climbing, watching movies, and getting plenty of sleep.

ENGINEERING SUSTAINABLE MATERIALS FROM NATURE

Grades 7-9, September 19

This workshop will introduce students to how materials scientists design plastics and composites, why there is a growing interest in sustainable alternatives and how natural materials such as cellulose and proteins can be engineered into useful materials. Hands-on activities will include making and testing materials, creating shape memory gelatin hydrogels that respond to their environment, and conclude with an introduction to research on protein nanofibers in Dr. Chan's lab at CMU. The goal is to introduce students to materials science and highlight how we can design for sustainability.

Dr. Daphne Chan



Dr. Daphne Chan is an assistant professor in the Department of Chemical Engineering at Carnegie Mellon University. Her research focuses on the design of sustainable and functional polymeric materials, including renewable protein-based copolymers and composites, block copolymer self-assembly, protein nanofibril self-assembly, and stimuli-responsive materials for soft robotics. A unifying theme of her work is the control of intermolecular interactions and hierarchical self-assembly to tailor microstructure and material performance.

GUM DROP ENGINEERING

Grades K-2, November 7

Learn the scientific method, how to make good observations, form a hypothesis, and conduct experiments to draw conclusions. You will learn the basics of structural engineering and how to build supportive, strong structures using gum drops! Will your tower stand up to the challenge? Will your bridge design be successful? Sign up to find out!

Sanjnaa Sridhar



Sanjnaa Sridhar is a second-year graduate student studying biotechnology and Pharmaceutical Engineering. Her hobbies are working out, crocheting and hiking. She loves the Gelfand Outreach programs because she enjoys teaching and working with younger students.

GREEN GENIUS

Grades 3-5, November 7

Become a Green Genius as you explore the science behind sustainability! Build your own water filtration system and learn about composting. Unleash your creative side with up-cycled collages and crafts from reusable materials. This workshop blends STEM, art, and problem-solving for a fun, interactive look at how you can help protect the planet!

CMU Sustainable Earth Organization



Sustainable Earth is Carnegie Mellon's primary undergraduate environmental organization. We focus on strengthening environmental initiatives on campus and in Pittsburgh. Our work focuses on advocacy, technology-driven solutions, and community-centered events. We also maintain our student-run campus garden, which serves as a place for community building and hands-on learning.

LISTENING: BIG BANG TO BLUE TOOTH

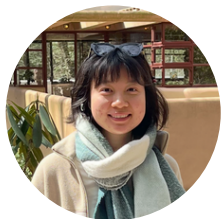
Grades 5-7, November 7

We listen every day to radio stations, YouTube videos or just phone calls. Did you know that we could also listen to the past, to hear the sound of the universe being born? In this class, we will learn how all of these achievements really boil down to the same technology. From waveguides in the size of nanometers, to large radio telescopes that are over a thousand feet, we will see the versatility of physics knowledge, deployed differently to create engineering marvels.

Anshu Sahoo and Yuntong (Joy) Zhou



Anshu Sahoo is studying for his PhD in Physics. He is trying to study the behavior of 2D materials that are just a few atoms thick. He utilizes these materials to fabricate nanoscale devices. He has designed a radio frequency-based interferometer that operates down to cryogenic temperatures and for high frequencies (5x times faster than the WiFi signals). Using this interferometer, he is trying to search for new quantum phenomena, which could make the computers ultrafast and energy efficient. Outside research he really loves cooking and playing badminton. Being an experimentalist, he tries to make dishes from different countries over the weekend. Also, he is a new kid in the boxing studio!



Yuntong (Joy) Zhou is a fourth-year graduate student in the physics department at Carnegie Mellon University. She works in Peterson Lab and their research in observational cosmology studies the radio signals from star formation in the early universe. She often travels to remote and quiet sites to collect data in radio frequencies. Outside research, she enjoys books and hydroponic gardening.

LIQUID SCIENCE

Grades K-2, October 10

Normal liquids can do crazy things when you look at them in the right way. Did you ever think you could watch them crawl on top of or below other liquids? This class is an introduction to the chemical and physical properties of different liquids and will allow you to apply critical thinking skills and the scientific method to make observations about liquids. Learn about physical properties such as density, viscosity, cohesion, and adhesion by observing the behavior of different liquids. You've never seen liquids this crazy!

Sanjnaa Sridhar



Sanjnaa Sridhar is a second-year graduate student studying biotechnology and Pharmaceutical Engineering. Her hobbies are working out, crocheting and hiking. She loves the Gelfand Outreach programs because she enjoys teaching and working with younger students.

MARVELOUS MACROMOLECULES

Grades 4-6, October 10

The existence of life is dependent upon nature's ability to manufacture very large, complicated molecules such as DNA and proteins. The ability of chemists to prepare really big molecules called polymers in the laboratory has revolutionized the manner in which we live. In this workshop, students will explore a variety of polymers, their usefulness, and how to make them in a manner which demonstrates care for the environment. This hands-on workshop will have students working in the lab and participating in lecture demonstrations to explore the amazing world of polymer chemistry.

Dr. Gizelle A. Sherwood



Dr. Gizelle A. Sherwood is currently an Associate Teaching Professor at Carnegie Mellon University. She earned her Ph.D. in 2008 where her research focused on the effects of aggregation on the photo-physics of oligomers related to MEHPPV and CN-PPV. She primarily lectures Modern Chemistry, the sophomore year Analytical Chemistry labs as well as a Cosmetic Chemistry course. She is passionate about engaging students in discussion of the application of Chemistry to everyday life and has been involved in several outreach programs working with both the Boy Scouts of America and the Leonard Gelfand Center.

Bella Ballin



Bella Ballin is currently a Lab Instructor in the Department of Chemistry at Carnegie Mellon University. After graduating with her BS from Chemistry in 2020. She joined the undergraduate teaching labs where she works with professors to teach students laboratory skills in General, Analytical and Organic Chemistry. She is passionate about supporting students while they learn hands-on techniques and has been involved in several outreach programs including Science Olympiad and Leonard Gelfand Center activities. She also enjoys bringing chemistry to life at home with her daughter.

MATH TURNED INSIDE OUT

Grades 5-7, September 19

In this workshop students will be introduced to the basic ideas of topology, a field of mathematics that is becoming increasingly crucial to physics and engineering. It is the study of how spaces are organized and how they are structured and whether they can be smoothly deformed into each other or not. Through hands-on exercises, the students will construct topologically inequivalent objects, like cylinders and Mobius strips, and examine them to discover and understand their differences.

Dr. Shubhayu Chatterjee



Dr. Shubhayu Chatterjee joined the Department of Physics at Carnegie Mellon University as an Assistant Professor in January 2023. His research focuses on emergent phenomena in condensed matter physics and tries to understand novel behavior which results from the sheer scale and complexity of billions of interacting particles in everyday materials. He also studies how to use tools from the quantum information community to sense such emergent phenomena. Prior to joining CMU, he was a postdoctoral fellow at UC Berkeley. He received his PhD in Physics from Harvard University and holds an integrated master's in physics from the Indian Institute of Technology Kanpur.

POND WATER ANALYSIS

Grades 3-5, October 10

One fish, two fish, red fish, blue fish! Have you ever wondered how fish and other creatures can live in ponds? In this workshop, we will investigate how the chemistry of water allows aquatic organisms to thrive. We will analyze water samples brought in by students and will also take a short field trip to the Westinghouse Pond, where we will take a sample of water to analyze. By the end of this workshop, students will understand how oxygen and other element concentrations in water create ideal homes for aquatic life!

Samhita Gudapati



Samhita Gudapati is a 4th year undergraduate double majoring in Environmental Engineering and Chemistry. She is a part of the McDonough lab group where she investigates the effects of PFAS on marine ecosystems. She has previously interned at The Boeing Company, working on environmental compliance and PFAS projects. Outside of her coursework, she is the Co-President of Sustainable Earth, Events chair for the Society of Women Engineers (SWE), and a booth chair for the American Society of Civil Engineers (ASCE). Samhita has worked at summer camps in the past, educating children about the environment and is excited to do so again with the Gelfand Center!

PRESSURE AND FLOW: WHAT MAKES BLOOD GO

Grades 7-9, November 7

Our hearts are very important. They pump blood through our whole body to give our organs the energy we need. But have you thought about the vessels the blood goes through? They're not just pipes, but they are living, growing and changing pieces of our bodies too. In this workshop, we'll talk about our blood vessels: what they're made of, how they help our heart keep blood flowing, and what can happen if they're not working properly. We'll build a simple experimental model of our aorta, the largest artery in our bodies, and then look at a computer program that uses math to explain how it works.

Dr. Jason Szafron



Dr. Jason Szafron is an assistant professor of Biomedical Engineering at Carnegie Mellon University. Professor Szafron received his BS in Biomedical Engineering from Texas A&M University, where he completed his undergraduate thesis on endovascular medical device design. He went on to receive his MS and PhD degrees in Biomedical Engineering from Yale University studying the computational optimization of polymeric scaffolds for tissue engineered vascular grafts. As a postdoctoral research fellow in the Department of Pediatrics at Stanford University, he worked on experimental and computational methods for quantifying mechanobiological changes during the progression of pulmonary arterial hypertension.

ROCKETRY

Grades 4-6, September 19

Get ready to build your own rocket! In this workshop we will build low power model rockets and launch them with real rocket motors. Learn about basic rocketry, recovery systems and much more! Three, two, one, until we blast off into the sky!



Carnegie Mellon Rocket Command is the launch pad, both figuratively and literally, for students interested in rocketry. Our mission is to provide students with hands-on experience in designing, building, and testing rockets while preparing them for future careers in related fields. Through our aerostructures, avionics, mechanical, and payload sub-teams, we bring students from different disciplines together to build increasingly advanced and innovative rockets.

ROLLER COASTER PHYSICS

Grades 5-6, October 10

Roll on in and ride along to learn about potential and kinetic energy! Plan and construct your own roller coaster model. Learn about speed, momentum and other forces that enable roller coasters to "roll".



Zheng Yu Zhuang

Zheng Yu Zhuang is a junior studying physics at CMU and is originally from Queens, New York. In his free time, he enjoys playing sports and finding new places to eat. After serving as a teaching assistant this past summer for the Gelfand Outreach summer programs he is looking forward to having fun and teaching new things this fall!





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Each class is \$55*

Classes take place from 9:00 AM - Noon
on the Carnegie Mellon campus

*To apply for scholarship funds, please submit a copy of the first page of your
IRS 1040 tax form from 2025

September 19th

- Gr. K-2: Bug-bots
- Gr. 3-5: Complex Fluid Toys
- Gr. 4-6: Brain Builders: Engineering Your Mind
- Gr. 4-6: Rocketry
- Gr. 5-7: Math Turned Inside Out
- Gr. 7-9: Engineering Sustainable Materials from Nature

October 10th

- Gr. K-2: Liquid Science
- Gr. 3-5: Pond Water Analysis
- Gr. 4-6: Marvelous Macromolecules
- Gr. 5-6: Roller Coaster Physics
- Gr. 6-9: All About the Brain

November 7th

- Gr. K-2: Gum Drop Engineering
- Gr. 2-4: Coding for Beginners
- Gr. 3-5: Green Genius
- Gr. 5-7: Listening: Big Bang to Blue Tooth
- Gr. 7-9: Pressure and Flow: What Makes Blood Go



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